

### III. CLAIM AMENDMENTS

1. (Currently Amended) A method for detection of a target nucleic acid sequence-(1A) in a mixture of different nucleic acids-(5) having additional binding sites-(10), the method comprising the subsequent steps:
  - A) hybridizing the target nucleic acid sequence with a probe-(15) in liquid phase, the probe having a first label-(20),
    - A1) hybridizing the additional binding sites with single stranded nucleic acids having random primary sequences in liquid phase,
  - B) separating the different nucleic acids-(1A, 5),
  - C) detecting the target nucleic acid-(1A) by using the labeled probe-(15).
2. (Cancelled)
3. (Currently Amended) Method according to claim 21,
  - wherein short nucleic acids having a length of 6 to 12 nucleotides are provided in step-A1 for hybridizing.
4. (Currently Amended) Method according to claim 21 or 3,
  - wherein hybridizing in step-A1 is carried out at roughly room temperature, and
  - hybridizing in step-A is carried out at a temperature between 56°C to 72°C.
5. (Currently Amended) Method according to claim 21 or 3,
  - wherein a nucleic acid with a length of at least 10-times the length of the single stranded nucleic acids-(25) with random primary sequence is used as a probe-(15),
  - wherein step-A1 and step-A are carried out simultaneously.
6. (Currently Amended) Method according to claim 32 or any of the claims 4 or 5,
  - wherein in step-A1 nucleic acids-(25) labeled with a second label-(30) are used for hybridizing,

- the second label-(30) being different from the first label-(20).

7. (Currently Amended) Method according to claim ~~3-2 or any of the claims 4 or 5,~~

- wherein the nucleic acids-(25) used for hybridizing in ~~step A1~~) are subsequently labeled with a second label-(30) after ~~step A1~~),
- the second label being different from the first label.

8. (Currently Amended) Method according to claim ~~1 or any of the claims 2 to 7, comprising at least one of:~~

- ~~wherein prior to step A) the mixture of different nucleic acids is denatured in a step A2);-~~
- ~~in A) a nucleic acid is used as a probe, having a stretch of 18 to 25 nucleotides being able to hybridize with the target nucleic acid sequence, this stretch having at least 80% sequence homology to the complementary sequence of the target nucleic acid sequence.~~

9. (Cancelled)

10. (Currently Amended) Method according to claim ~~1 or any of the claims 2 to 9, comprising at least one of:~~

- ~~wherein in step B) the nucleic acids are separated according to their mass by using a gel electrophoresis;~~
- ~~in B) a microfluidic chip having capillaries suitable for nucleic acid electrophoresis is used for separation.~~

11. (Cancelled)

12. (Currently Amended) Method according to claim ~~1 or any of the claims 2 to 11,~~

- wherein a first and if present a second label is used, each being selected from the following group:
- radioactive labels, fluorescent markers, chemoluminescence, bioluminescence, magnetic labels and antigen labels.

13. (Original) Method according to claim 12,

- wherein fluorescent markers are used as the first and if present second label,
- the fluorescent markers of the first and second label emitting radiation of different wavelengths.

14. (Currently Amended) Method according to claim 13,

- wherein in ~~step C)~~ the amount and the size of the hybrid strand of the target nucleic acid ~~(1A)~~ and the probe ~~(15)~~ is determined via the first label ~~(20)~~ and in case the second label ~~(30)~~ is present, the amount of the other different nucleic acids ~~(5)~~ in the mixture is determined via the second label ~~(30)~~,
- using a spectrometer for the detection of both labels.

15. (Currently Amended) A kit for performing a separation method according to ~~claim 2 or any of the claims 3 to 7~~ claim 1, comprising:

- a probe ~~(15)~~ labeled with a first label ~~(20)~~, able to hybridize with a target nucleic acid sequence ~~(1A)~~,
- oligonucleotides ~~(25)~~ with a randomized primary sequence for hybridizing to the additional binding sites ~~(10)~~ present in the mixture of nucleic acids,
- a mass separator means for carrying out the separation of nucleic acids according to their mass.

16. (Currently Amended) Kit according to ~~the previous claim 15, comprising at least one of:~~

- ~~wherein the mass separator means for carrying out a separation of the nucleic acids include comprises a microfluidic chip;~~
- a second label for labeling the oligonucleotides with randomized primary sequence.

17. (Cancelled)